Directorate of New and Renewable Energy (DNRE),
Old Industries Office Building, Upper Chandmari
Kohima - 797001 Nagaland

Expression of Interest (EOI)

for

Design, supply, erection, testing and commissioning including warranty, operation & maintenance for 5 years of Grid interactive Rooftop Solar power plant of various capacities in Nagaland

Ref: EOI No: DNRE/SPP/RT/2018-19/1673
Dated: 18th July, 2018

EOI No. DNRE/SPP/RT/2018-19/1673 Dated: 18th July, 2018

Particulars of Work

Eligible and prospective Bidders may quote their offers as per details mentioned below :

Particulars of work	Supply, erection, testing and commissioning including warranty, operation & maintenance for 5 years of grid interactive rooftop solar PV power plant of various capacities in the State of Nagaland
Cost of bid document (Non-refundable)	Rs.10,000/- Bid submitted without cost of bid will be rejected.
Earnest Money Deposit	Rs. 3,00,000.00 (Rupees Three Lakh) only.
Period of Empanelment	One year
Date of commencement for Issue of bid documents	25th July, 2018
Last date & time of submission of bids document	6th Sept,2018 upto 1.00 PM (bid received after the due date/time will not be entertained)
Date & time of opening Technical bid - Part-I	10th Sept, 2018 at 2.00 PM
Date & time of opening Financial bid - Part-II	Will inform the successful bidders in the Technical bid (Part-I)
Place of submission of bid documents and address for communication.	Directorate of New and Renewable Energy (DNRE), Old Industries Office Building, Upper Chandmari Kohima - 797001. Nagaland

(Er.Kavito Chishi)
Director
New & Renewable Energy
Nagaland : Kohima

A. BACKGROUND :

The Government of India launched the National Action Plan for Climate Change (NAPCC) in 2008 to promote ecologically sustainable growth while addressing India's energy security challenge. The Jawaharlal Nehru National Solar Mission (JNNSM) is one of the initiatives to mitigate emissions from fossil fuels in the energy sector by promoting solar power. The aim of the Mission is to focus on setting up an enabling environment for solar technology penetration in the country both at a centralized and decentralized level by way of focusing on promoting Off grid/ Grid Connected Solar Power Generation including hybrid systems to meet/supplement power, heating and cooling energy requirements. These systems still require interventions to bring down costs but the key challenge is to provide an enabling framework and support for entrepreneurs to develop markets. In order to create a sustained interest within the investor community, Ministry of New & Renewable Energy (MNRE), Govt of India has given the details of various promotional activities on the website of MNRE www.mnre.gov.in. Under this scheme, individuals, residential/ Institutional/ Social Sectors /Govt. building owners are eligible to set up Solar Power Plant within the prescribed capacity limit of upto 1000 kW (1 MW) at one site. Capital subsidy upto maximum 60% of the benchmark cost of the system as per the latest notification of MNRE or upto maximum 60% of the actual cost arrived through competitive bidding process, whichever is lower, is admissible from MNRE, Government of India for all rooftops other than for industrial and commercial buildings and Government Buildings. The Ministry revised rate of CFA from time to time.

In order to provide technical assistance and determination of the competitive cost and fixation of CFA of the solar power project to be installed at various premises/organizations under the Nagaland grid interactive rooftop solar PV power plant scheme, DNRE invites bids for empanelment of firms for supply, erection, testing and commissioning including warranty, operation & maintenance for 5 years of Grid Interactive Rooftop Solar Power Plants of capacities upto 1000 kWp in the State of Nagaland from the various Channel Partners and New Entrepreneurs empanelled by MNRE.

B. Scope of Work :

Work of installation of rooftop grid connected SPV Systems shall involve;

(i) Identification and motivation of prospective beneficiaries.
(ii) Obtaining No objection certificate (NOC) from concerned DISCOM – Power Department for grid connectivity / interconnection.
(ii) Supply, installation, commissioning and maintenance for 5 Years of roof top SPV grid connected Power Plant as per schedule given. Maintenance of Solar Photovoltaic Power Plant would include wear and tear, overhauling, machine breakdown, insurance, and replacement of defective modules, invertors / Power Conditioning Unit (PCU), spares, consumables & other parts for a

period of 5 years. Replacement of parts free of cost shall be against manufacturing defect only.

(iv) Establishing "After sales service centres" in concerned area to cater the maintenance needs of beneficiaries.

(v) DNRE will empanel those firms who are successful in this empanelment process and wish to provide their services on the lowest quoted prices which are received under this offer.

(vi) The selected firms will have to execute the selected projects for which the sites will be allocated by DNRE under the Grid Interactive Roof Top Solar (RTS) Power Plants in accordance with technical specification and various other requirements as per latest directives / guidelines of MNRE under JNNSM. The various group of size / capacity of the grid interactive rooftop solar power plant shall be as under :

Sl. No	**Group of sizes/Capacity of RTS**	**Location**
1	Up to 5 KWp	Anywhere in the State of Nagaland
2	6 to 10 KWp	
3	11 to 50 KWp	
4	51 to 100 KWp	
5	101 to 300 KWp	
6	301 to 500 KWp	

(vii) The successful empanelled firms may approach the applicants registered by DNRE for receiving the orders on the rates approved by DNRE for Turnkey Execution of the Solar PV Plants. DNRE will not be responsible in case any empanelled firm does not get any work order from the registered applicants under the Grid Interactive Roof Top Solar PV Power Plants Scheme. The registered applicants under this scheme shall be free to install their projects from any firm subjected to the condition that project shall have to be installed/commissioned as per the MNRE guidelines / Technical specifications.

(viii) The empanelled firms will supply, erect, test and commission the Solar Power Plant and shall make all necessary arrangement for evacuation and injection of power / surplus power to the Power Department grid at the interconnection point. The admissible CFA released by the MNRE, GoI shall be released to the empanelled firm after successful commissioning of the plant and verification by DNRE

C. SITE / PROJECT LOCATION :

It may be noted that under "Grid Interactive Roof Top Solar PV Power Plant Scheme", projects of varying capacities shall be allotted. The project installation may differ from site to site. The following types may be considered :

- Flat Roof Top
- Inclined Roofs

- Any feasible elevated part of building
- Ground mounted if feasible

Hence for providing the rates for installation of plants, the bidder should *carefully* consider the various factors related to the different types of site conditions that can be expected in the 12 Districts of Nagaland and submit their bids accordingly. No additional payments above quoted rates shall be admissible in any case.

D. INFORMATION TO THE FIRM / BIDDER :

1. Bid submission by the bidder

1.1 Each bidder should submit financial bid as per the annexed Format:

1.2 The firm/bidder should submit their offer in two separate sealed envelopes i.e.

Part-I : TECHNICAL PARTICULARS:

All relevant technical documents along with the receipt of payment for purchase of Tender document, Earnest Money & complete EOI document duly signed on each page excluding financial offer.

PART-II: FINANCIAL OFFER: The Price Bid to be quoted for various capacities

Both these envelopes should be put and sealed in another envelope addressed to:

The Director,
Directorate of New and Renewable Energy (DNRE),
Old Industries Office Building, Upper Chandmari
Kohima – 797001
Nagaland.

subscribed with the following :-

a. EOI No. **DNRE/SPP/RT/2018-19**
b. Offer for installation of Solar Power Plant under "Grid Connected Rooftop Solar Power Plant Scheme"
c. Name and address of the firm.

1.3 The Technical particulars shall be opened on due date and time. Only technically qualified firms/ bidders shall be short listed to attend the Financial Bid.
The date of opening of the financial offer / bid shall be opened on the same day if time permits or else will be communicated to the technically successful firms/ bidders accordingly.

2. Earnest Money/Security Amount:-

2.1 Earnest money deposit (EMD) @ Rs.3.00 lakhs is required to be deposited along with the bid without which the bid will not be accepted. No interest will be payable for the EMD amount under any circumstances.

2.2 Earnest money can be deposited in the form of Bank Guarantee / FDR / Demand Draft in favour of Director, DNRE from any Nationalized Bank payable at Kohima and the document as proof should be enclosed.

2.3 For successful bidder(s), EMD submitted shall be taken as Security Deposit/ Performance Guarantee Fees as detailed at clause 2.6 below.

2.4 EMD would be forfeited in case of non- compliance of the work order by the successful bidder.

2.5 In case of claim for exemption from depositing the Earnest money, sufficient proof is to be attached with the bid.

2.6 Security Deposit/ Performance Guarantee Fees (PGF): The successful bidder must deposit the Security amount / Performance Guarantee fees @ 10% of the work order after selection as empanelment in the form of Bank Guarantees valid from the date of acceptance till the completion of empanelment period. The said deposit would be forfeited, if the supplies are not made as per the Terms & Conditions of the work order. Security deposit /PGF amount will be refunded after the expiry of the empanelment period subject to satisfactory execution / performance of the systems.

2.7 The earnest money of all unsuccessful bidders shall be released soon after selection of selected bidder(s) without any interest against the submission of their written letter regarding release of the same

3. Selection of Bidder:-

DNRE shall empanel more than one qualified bidder and selection of work executing firm shall be done by the DNRE /beneficiary on their preference.

4. Duration of Empanelment:-

The selected firms/bidders will be empanelled initially for one year. Empanelment period may be extended on the basis of performance of the firm.

5. Eligibility criteria :

5.1 The Bidder should be preferably an MNRE empanelled Channel Partner and New Entrepreneur (the copy of certificate/letter issued by MNRE to the firm in this regard should be enclosed for rooftop grid connected solar power plants for the current year. List shall be valid as on date of issue of tender).

5.2 No price and purchase preference will be available on these projects.

5.3 Should have average turnover of Rs. 1 Crore or more during the last three years.

5.4 Should have experience of successful commissioning of minimum aggregate of 100 kWp of off grid / grid interactive solar power plant and at least one solar power plant having minimum capacity of 20 kWp during last three years. For experience, supportive documents are to be enclosed.

5.5 The Bidders should have/willing to open adequate field service setup to provide good after sale services including necessary repair and maintenance in the state of Nagaland after empanelment preferably in Dimapur/Kohima. The service centre should be located at customer friendly area with minimum infrastructural requirements, maintenance of adequate spares with competent and trained technicians.

5.6 Attested copies of valid Test Certificates & supporting documents of components of Solar PV Power Plant as specified and required in the Technical- Bid of this tender document should be submitted alongwith the bid.

5.7 The Bidders should fulfill all requirements as per provisions under JNNSM, MNRE Scheme, GOI.

5.8 All the components including power plant, software's and other components mentioned should be quoted as a single item. No partial quotes are accepted. For all the equipment the bidder should have an authorization certificate from OEM (Original Equipment Manufacturer).

The above stated requirements are compulsory to be fulfilled by the Bidder and DNRE may also ask for any additional information as may be deemed necessary in public interest.

6. Payments Terms :-

Empanelled firms will have to receive work orders from DNRE on the rates not higher than the approved rate by DNRE and will get payments as under:-

6.1 70% amount of the work value shall be paid by the purchaser after successful installation, commissioning of the RTS Power Plant and injection of surplus power (if any) into the Power Department grid confirming to technical specification as specified in this EoI and verification by DNRE. On submission of invoice to the purchaser , applicable MNRE CFA .will be released.

6.2 20% amount of the work value shall be paid by the purchaser after 3 months from the date of installation and commissioning of RTS Power Plant at site subject to successfully passing the performance ratio test and release of CFA by MNRE, GoI.

6.3 10% of the total contract value shall be treated as Comprehensive Maintenance Contract (CMC) and shall be paid against satisfactory performance of the RTS Power Plant during warranty, operation and maintenance period. This amount shall be paid by the purchaser in 5 (five) equal annual installments, starting from completion of one year from the date of commissioning at site. The bidder shall have to submit annual performance & functionality report to Purchaser - DNRE for the release of annual payments.

6.4 Copies of invoices after inspection shall be submitted to DNRE along with Project Completion Report, Photographs, and other required documents.

6.5 Tax clearance certificates of the firm should be produced as and when insisted by DNRE.

7. **Bid evaluation:**

There will be a Pre-Bid meeting at the office of the Directorate of New & Renewable Energy on 5th Sept, 2018 at 11 AM. Only 1 (one) authorized representative of a Firm / Bidder will be allowed to attend the said meeting. The EoI document will be finalized by including any modifications decided if any after the Pre-Bid meeting. Addendum will be made if required.

7.1 The evaluation process comprises of the following steps:

Step I - Evaluation check of Bid as per the eligibility criteria
Step II – Evaluation of Technical Bid
Step III - Evaluation of Price Bid
Step IV - Selection of Bidders(s) for empanelment

7.2 **Responsiveness check of technical bid**

The evaluation check of Bid submitted by Bidders shall be scrutinized to establish responsiveness to the requirements laid down in the EoI.

a. Bids that are incomplete, i.e. not accompanied by any of the applicable formats inter alia covering letter, power of attorney, format for disclosure, valid Bid Bond etc.;
b. Bid not signed by Bidder in the manner indicated in this EoI;
c. Material inconsistencies in the information /documents submitted by the Bidder, affecting the Eligibility Criteria.
d. Information not submitted in the formats specified in this EOI;
e. Bid being conditional in nature;
f. Bid not received by the Bid deadline;
g. Bid having Conflict of Interest;
h. Bidder delaying in submission of additional information or clarifications sought by DNRE as applicable;
i. Bidder makes any misrepresentation.

Each Bid shall be checked for compliance with the submission requirements set forth in this EoI before the evaluation of Bidder's fulfillment of Eligibility Criteria is taken up.

7.3 **Evaluation of bidder's fulfillment of eligibility criteria :**

Evaluation of Bidder's eligibility will be carried out based on the information furnished by the Bidder as per the prescribed Formats and related documentary evidence in support of meeting the Eligibility Criteria. Non-availability of information and related documentary evidence for the satisfaction of Eligibility Criteria may cause the Bid to be non-responsive.

7.4 **Evaluation of Technical Bid :**

Detailed Technical evaluation criteria:

a) The Bids shall be evaluated on the basis of the application and the supporting documents submitted by them.

b) The evaluation would be Quality and Cost based. The Technical Proposal would be evaluated first and points would be allotted to each of the bidders as follows :

S.No.	Fields	Points	
A	**Empanelment in MNRE**		
1	Category A' Channel Partners of MNRE List	70	70
2	Category B' Channel Partners of MNRE List	65	
3	Category C' Channel Partners of MNRE List	60	
4	Empanelled New Entrepreneur of MNRE List	50	
B	Experience of supply, installation & commissioning of Grid Connected RTS Power Project, with net-metering facility, (commissioned at least one month prior to last date of submission of offer)		
1	Above 100 KWp upto 500 KWp capacity	10	10
2	Above 1 KWp upto 100 KWp	5	
C	Financial capability- Average turnover for last 3 years		
1	More than 1 Crore	10	10

Note: - Documents to be submitted in support of the above Criteria:-

1. Documentary Proof regarding being empanelled in MNRE as Empanelled Channel Partner or New Entrepreneur
2. For Experience of Projects installed & commissioned, a copy of the Completion Certificate issued by the beneficiary should be enclosed.
3. CA certificate on letter head of CA regarding Average Turnover for last three years.

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The minimum Score to be obtained to qualify technically should be at least 50 points otherwise the financial offer shall not be considered.

7.5 **Evaluation of price bid:**

i) Price Bid (Envelope II) of the Qualified Bidders shall be opened in presence of the representatives of such Qualified Bidders, who wish to be present on a date as may be intimated by DNRE to the Bidders through website or email. The evaluation of Price Bid shall be carried out based on the information furnished in Envelope II (Price Bid).

ii) The Price Bid submitted by the Bidders shall be scrutinized to ensure conformity with the EOI. Any Bidder not meeting any of the requirements of this EoI may cause the Bid to be considered "Non-responsive" at the sole decision of DNRE.

iii) DNRE will prepare the list rates offered by bidder(s) in Rupees per Kilowatt for each group of size/capacity.

7.6 **Selection of bidder(s) for empanelment:**

i. Only the bidders who are technically qualified as per terms of DNRE will be considered for empanelment.

ii. The rates quoted by bidder for every group of size/capacity (kWh) will be taken as the offer rate of the firm.

iii. The empanelled firms should not charge more than their offer/quoted rate for a particular capacity (kWh) from the beneficiary.

iv. The list of the successful empanelled bidder / firm and their capacity wise offered rate will be circulated to the registered applicants.

7.7 **Letter of Award :**

i) DNRE shall issue work order to any one of the empanelled firms as per beneficiary's choice at the rate (in Rs/KW) not more than the approved rate of DNRE.

ii) Any empanelled firm gets order from DNRE, it shall implement / execute thesupply, erection, testing & commissioning, storage & civil work within the mutually agreed time period for completion of the project work.

iii) The registered beneficiary and the concerned empanelled firm shall submit the Completion certificate on successful installation/commissioning of the project to DNRE. This project site will be verified by DNRE officials

iv) In case of breach of any terms of the agreement by any party, DNRE may forfeit the EMD/Security money of the concerned empanelled firm or may cancel the registered project of the applicant, as the case may be.

7.8 **Central Financial Assistance (CFA) disbursement:**

i) DNRE will disburse the applicable CFA to the registered beneficiary or empanelled firm (as the case may be) directly on completion of necessary formalities and procedures set by DNRE.

ii) The applicable CFA shall be calculated on the benchmark cost fixed by MNRE/ the rates finalized by DNRE through this EOI, whichever is lower is applicable.

iii) In case MNRE deducts applicable subsidy due to delay in project execution or any other reasons like revision of benchmark cost, percentage of applicable subsidy on benchmark cost etc, then the actual subsidy amount provided by MNRE shall be released to registered applicant or empanelled firm as the case may be.

iv) Total liability of DNRE under this contract shall be limited to release of subsidy after 3 months of successful commissioning and completion of the project subjected to releases of MNRE CFA.

v) However, if beneficiary contribution is collected by DNRE, then the same will be released after successful commissioning of the RTS system to the empanelled firm.

vi) In case, beneficiary contribution is not collected by DNRE, then the payment arrangements over and above the CFA made between the beneficiary and empanelled firm must be made known to DNRE,

vii) Joint inspection by DNRE shall be carried out before release of subsidy. Bidder should provide all the data and necessary proof of meeting the technical specifications as specified in the EoI.

8. DNRE 's Right to accept any bid and to reject any or all bids :

8.1 The DNRE reserves the right to accept or reject any bid, and to cancel the bidding process and reject all bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders.

9. OTHER TERMS AND CONDITIONS

(a) Force Majeure

If the performance of the contract is prevented, restricted, delayed or interfered by reason of:

* Fire explosion, cyclone floods.

* War, revolution, acts of public enemies, blockage or embargo.

* Strikes

(b) Dispute Resolution

In all cases of dispute or disagreement between the parties hereto as to any matter arising out of or relating to this offer, if no understanding can be reached between the parties for the provisions of the Indian Arbitration shall be Guwahati High Court, Kohima bench only.

(c). Civil Dispute

In case of any dispute of whatever nature between the first party and second party or otherwise, the Guwahati High Court, Kohima Bench located at Kohima shall have the sole jurisdiction to decide the case.

10. Signing of Contract:

The Successful Bidder(s) will sign a Memorandum of Agreement/ Contract Agreement on the terms of contract with DNRE within fifteen (15) days from the date of issue of empanelment letter or as defined by DNRE work order.

TECHNICAL SPECIFICATIONS

The proposed projects shall be commissioned as per the technical specifications given below. Any shortcomings will lead to cancelation of subsidy in full or part as decided by Director, Directorate of New & Renewable Energy (DNRE), Nagaland & Authority's decision will be final and binding on the bidder.

DEFINITION

A Grid Tied Solar Rooftop Photo Voltaic (SPV) power plant consists of SPV array, Module Mounting Structure, Power Conditioning Unit (PCU) consisting of Maximum Power Point Tracker (MPPT), Inverter, Battery (optional) and Controls & Protections, interconnect cables and switches. PV Array is mounted on a suitable structure. Grid tied SPV system shall be with battery or without battery and should be designed with necessary features to supplement the grid power during day time. Components and parts used in the SPV power plants including the PV modules, metallic structures, cables, junction box, switches, PCUs etc., should conform to the BIS or IEC or international specifications, wherever such specifications are available and applicable.

Solar PV system shall consist of following equipments/components.

- Solar PV modules consisting of required number of **Crystalline** PV modules.
- Grid interactive Power Conditioning Unit with Remote Monitoring System
- Battery (optional) based on the beneficiary's requirement
- Mounting structures
- Junction Boxes.
- Earthing and lightening protections.
- IR/UV protected PVC Cables, pipes and accessories

1. SOLAR PHOTOVOLTAIC MODULES:

1.1. The PV modules used should be made in India.

1.2. The PV modules used must qualify to the latest edition of IEC PV module qualification test or equivalent BIS standards Crystalline Silicon Solar Cell Modules IEC 61215/IS14286. In addition, the modules must conform to IEC 61730 Part-2- requirements for construction & Part 2 – requirements for testing, for safety qualification or equivalent IS.

a) For the PV modules to be used in a highly corrosive atmosphere throughout their lifetime, they must qualify to IEC 61701/IS 61701

b) The total solar PV array capacity should not be less than allocated capacity (kWp) and should comprise of solar crystalline modules of minimum **250** Wp and above wattage. Module capacity less than minimum **250** watts should not be accepted.

c) Protective devices against surges at the PV module shall be provided. Low voltage drop bypass diodes shall be provided.

d) PV modules must be tested and approved by one of the IEC authorized test centers.

e) The module frame shall be made of corrosion resistant materials, preferably having anodized aluminum.

f) The bidder shall carefully design & accommodate requisite numbers of the modules to achieve the rated power in his bid.

g) Other general requirement for the PV modules and subsystems shall be the following:-

I. The rated output power of any supplied module shall have tolerance of +/- 3%.

II. The peak-power point voltage and the peak-power point current of any supplied module and/or any module string (series connected modules) shall not vary by more than 2 (two) per cent from the respective arithmetic means for all modules and/or for all module strings, as the case may be.

III. The module shall be provided with a junction box with either provision of external screw terminal connection or sealed type and with arrangement for provision of by-pass diode. The box shall have hinged, weather proof lid with captive screws and cable gland entry points or may be of sealed type and IP-65 rated.

IV. IV curves at STC should be provided by bidder.

1.3. Modules deployed must use a RF identification tag. The following information must be mentioned in the RFID used on each modules (This can be inside or outside the laminate, but must be able to withstand harsh environmental conditions).

a) Name of the manufacturer of the PV module

b) Name of the manufacturer of Solar Cells.

c) Month & year of the manufacture (separate for solar cells and modules)

d) Country of origin (separately for solar cells and module)

e) I-V curve for the module Wattage, Im, Vm and FF for the module

f) Unique Serial No and Model No of the module

g) Date and year of obtaining IEC PV module qualification certificate.

h) Name of the test lab issuing IEC certificate.

i) Other relevant information on traceability of solar cells and module as per ISO 9001 and ISO 14001

1.4. **Warranties:**

a) Material Warranty:

i. Material Warranty is defined as: The manufacturer should warrant the Solar Module(s) to be free from the defects and/or failures specified below for a period not less than five (05) years from the date of installation to the customer beneficiary

ii. Defects and/or failures due to manufacturing

iii. Defects and/or failures due to quality of materials

iv. Non conformity to specifications due to faulty manufacturing and/or inspection processes. If the solar Module(s) fails to conform to this warranty, the manufacturer will repair or replace the solar module(s), at the Owners sole option

b) Performance Warranty:

i. The predicted electrical degradation of power generated not exceeding 20% of the minimum rated power over the 25 year period and not more than 10% after ten years period of the full rated original output.

2. **ARRAY STRUCTURE**

a) Hot dip galvanized MS mounting structures may be used for mounting the modules/ panels/arrays. Each structure should have angle of inclination as per the site conditions to take maximum insolation. However to accommodate more capacity the angle

inclination may be reduced until the plant meets the specified performance ratio requirements.

b) The Mounting structure shall be so designed to withstand the speed for the wind zone of the location where a PV system is proposed to be installed It may be ensured that the design has been certified by a recognized Lab/ Institution in this regard and submit wind loading calculation sheet to DNRE office. Suitable fastening arrangement such as grouting and calming should be provided to secure the installation against the specific wind speed.

c) The mounting structure steel shall be as per latest IS 2062: 1992 and galvanization of the mounting structure shall be in compliance of latest IS 4759.

d) Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts. Aluminium structures also can be used which can withstand the wind speed of respective wind zone. Necessary protection towards rusting need to be provided either by coating or anodization.

e) The fasteners used should be made up of stainless steel. The structures shall be designed to allow easy replacement of any module. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPV panels

f) Regarding civil structures the bidder need to take care of the load baring capacity of the roof and need arrange suitable structures based on the quality of roof.

g) The total load of the structure (when installed with PV modules) on the terrace should be less than 60 kg/m2.

h) The minimum clearance of the structure from the roof level should be 300 mm.

3. **JUNCTION BOXES (JBs)**

a) The junction boxes are to be provided in the PV array for termination of connecting cables. The J. Boxes (JBs) shall be made of GRP/FRP/Powder Coated Aluminium /cast aluminium alloy with full dust, water & vermin proof arrangement. All wires/cables must be terminated through cable lugs. The JBs shall be such that input & output termination can be made through suitable cable glands.

b) Copper bus bars/terminal blocks housed in the junction box with suitable termination threads Conforming to IP65 standard and IEC 62208 Hinged door with EPDM rubber gasket to prevent water entry. Single / double compression cable glands. Provision of earthings. It should be placed at 5 feet height or above for ease of accessibility.

c) Each Junction Box shall have High quality Suitable capacity Metal Oxide Varistors (MOVs) / SPDs, suitable Reverse Blocking Diodes. The Junction Boxes shall have suitable arrangement monitoring and disconnection for each of the groups.

d) Suitable markings shall be provided on the bus bar for easy identification and the cable ferrules must be fitted at the cable termination points for identification

4. **DC DISTRIBUTION BOARD:**

a) DC Distribution panel to receive the DC output from the array field.

b) DC DPBs shall have sheet from enclosure of dust & vermin proof conform to IP 65 protection. The bus bars are made of copper of desired size. Suitable capacity MCBs/MCCB shall be provided for controlling the DC power output to the PCU along with necessary surge arrestors.

5. **AC DISTRIBUTION PANEL BOARD:**

a) AC Distribution Panel Board (DPB) shall control the AC power from PCU/ inverter, and should have necessary surge arrestors. Interconnection from ACDB to mains at LT Bus bar while in grid tied mode.

b) All switches and the circuit breakers, connectors should conform to IEC 60947, part I, II and III/ IS60947 part I, II and III.

c) The changeover switches, cabling work should be undertaken by the bidder as part of the project.

d) All the Panel's shall be metal clad, totally enclosed, rigid, floor mounted, air - insulated, cubical type suitable for operation on three phase / single phase, 415 or 230 volts, 50 Hz

e) The panels shall be designed for minimum expected ambient temperature of 45 degree Celsius, 80 percent humidity and dusty weather.

f) All indoor panels will have protection of IP54 or better. All outdoor panels will have protection of IP65 or better.

g) Should conform to Indian Electricity Act and rules (till last amendment).

h) All the 415 AC or 230 volts devices / equipment like bus support insulators, circuit breakers, SPDs, VTs etc., mounted inside the switchgear shall be suitable for continuous operation and satisfactory performance under the following supply conditions

Variation in supply voltage	+/- 10 %
Variation in supply frequency	+/- 3 Hz

6. **PCU/ARRAY SIZE RATIO:**

a) The combined wattage of all inverters should not be less than rated capacity of power plant under STC.

b) Maximum power point tracker shall be integrated in the PCU/inverter to maximize energy drawn from the array.

7. **PCU/ Inverter:**

As SPV array produce direct current electricity, it is necessary to convert this direct current into alternating current and adjust the voltage levels to match the grid voltage. Conversion shall be achieved using an electronic Inverter and the associated control and protection devices. All these components of the system are termed the "Power Conditioning Unit (PCU)". In addition, the PCU shall also house MPPT (Maximum Power Point Tracker), an interface between Solar PV array & the Inverter, to the power conditioning unit/inverter should also be Battery /DG set interactive. If necessary. Inverter output should be compatible with the grid frequency. Typical technical features of the inverter shall be as follows:

- Switching devices : IGBT/MOSFET
- Control : Microprocessor /DSP

 Nominal AC output voltage and frequency : 415V, 3 Phase, 50 Hz (In case single phase inverters are offered, suitable arrangement for balancing the phases must be made.)

 Output frequency : 50 Hz

 Grid Frequency Synchronization range : + 3 Hz or more

 Ambient temperature considered : -20° C to 50° C

 Humidity : 95 % Non-condensing

 Protection of Enclosure : IP-20(Minimum) for indoor.
: IP-65(Minimum) for outdoor.

 Grid Frequency Tolerance range : + 3 or more

 Grid Voltage tolerance : - 20% & + 15 %

 No-load losses : Less than 1% of rated power

 Inverter efficiency(minimum) : >93% (In case of 10kW or above)

 Inverter efficiency (minimum) : > 90% (In case of less than 10 kW)

 THD : < 3%

 PF : > 0.9

a) Three phase PCU/ inverter shall be used with each power plant system (10kW and/or above) but In case of less than 10kW single phase inverter can be used.

b) PCU/inverter shall be capable of complete automatic operation including wake-up, synchronization & shutdown.

c) The output of power factor of PCU inverter is suitable for all voltage ranges or sink of reactive power, inverter should have internal protection arrangement against any sustainable fault in feeder line and against the lightning on feeder.

d) Built-in meter and data logger to monitor plant performance through external computer shall be provided.

e) The power conditioning units / inverters should comply with applicable IEC/ equivalent BIS standard for efficiency measurements and environmental tests as per standard codes IEC 61683/IS 61683 and IEC 60068- 2(1,2,14,30) /Equivalent BIS Std.

f) The charge controller (if any) / MPPT units environmental testing should qualify IEC 60068-2(1, 2, 14, 30)/Equivalent BIS std. The junction boxes/ enclosures should be IP 65(for outdoor)/ IP 54 (indoor) and as per IEC 529 specifications.

g) The PCU/ inverters should be tested from the MNRE approved test centres / NABL /BIS /IEC accredited testing- calibration laboratories. In case of imported power conditioning units, these should be approved by international test houses.

8. INTEGRATION OF PV POWER WITH GRID:

The output power from SPV would be fed to the inverters which converts DC produced by SPV array to AC and feeds it into the main electricity grid after synchronization. In case

of grid failure, or low or high voltage, solar PV system shall be out of synchronization and shall be disconnected from the grid. Once the DG set/ battery comes into service, PV system shall again be synchronized with DG supply/ battery and load requirement would be met to the extent of availability of power. 4 pole isolation of inverter output with respect to the grid/ DG/ battery power connection need to be provided.

9. DATA ACQUISITION SYSTEM / PLANT MONITORING

i. Data Acquisition System shall be provided for each of the solar PV plant.

ii. Data Logging Provision for plant control and monitoring, time and date stamped system data logs for analysis with the high quality, suitable PC. Metering and Instrumentation for display of systems parameters and status indication to be provided.

iii. Solar Irradiance: An integrating Pyranometer / Solar cell based irradiation sensor (along with calibration certificate) provided, with the sensor mounted in the plane of the array. Readout integrated with data logging system.

iv. Temperature: Temperature probes for recording the Solar panel temperature and/or ambient temperature to be provided complete with readouts integrated with the data logging system

v. The following parameters are accessible via the operating interface display in real time separately for solar power plant:

- AC Voltage.
- AC Output current.
- Output Power
- Power factor.
- DC Input Voltage.
- DC Input Current.
- Time Active.
- Time disabled.
- Time Idle.
- Power produced
- Protective function limits (Viz-AC Over voltage, AC Under voltage, Over frequency, Under frequency ground fault, PV starting voltage, PV stopping voltage.

vi. All major parameters available on the digital bus and logging facility for energy auditing through the internal microprocessor and read on the digital front panel at any time) and logging facility (the current values, previous values for up to a month and the average values) should be made available for energy auditing through the internal microprocessor and should be read on the digital front panel.

vii. PV array energy production: Digital Energy Meters to log the actual value of AC/ DC voltage, Current & Energy generated by the PV system provided. Energy meter along with CT/PT should be of 0.5 accuracy class.

viii. Computerized DC String/Array monitoring and AC output monitoring shall be provided as part of the inverter and/or string/array combiner box or separately.

ix. String and array DC Voltage, Current and Power, Inverter AC output voltage and current (All 3 phases and lines), AC power (Active, Reactive and Apparent), Power Factor and AC energy (All 3 phases and cumulative) and frequency shall be monitored.

x. Computerized AC energy monitoring shall be in addition to the digital AC energy meter.

xi. The data shall be recorded in a common work sheet chronologically date wise. The data file shall be MS Excel compatible. The data shall be represented in both tabular and graphical form.

xii. All instantaneous data shall be shown on the computer screen.

xiii. Software shall be provided for USB download and analysis of DC and AC parametric data for individual plant.

xiv. Provision for Internet monitoring and download of data shall be also incorporated.

xv. Remote Server and Software for centralized Internet monitoring system shall be also provided for download and analysis of cumulative data of all the plants and the data of the solar radiation and temperature monitoring system.

xvi. Ambient / Solar PV module back surface temperature shall be also monitored on continuous basis.

xvii. Simultaneous monitoring of DC and AC electrical voltage, current, power, energy and other data of the plant for correlation with solar and environment data shall be provided.

xviii. Remote Monitoring and data acquisition through Remote Monitoring System software at the owner beneficiary / DNRE office location with latest software/hardware configuration and service connectivity for online / real time data monitoring/control complete to be supplied and operation and maintenance/control to be ensured by the supplier. Provision for interfacing these data on DNRE server / portal in future shall be kept.

10. **TRANSFORMER "IF REQUIRED" & METERING:**

a) Dry/oil type relevant kVA, 11kV/415V, 50 Hz Step up along with all protections, switchgears, Vacuum circuit breakers, cables etc. along with required civil work.

b) The Net metering ie, bidirectional electronic energy meter (0.5 S class) shall be installed for the measurement of import/Export of energy at the Consumer beneficiary premises.

c) The bidder must take approval/NOC from the Concerned Power Department for the connectivity, technical feasibility, and synchronization of SPV plant.

11. **POWER CONSUMPTION:**

a) Regarding the generated power consumption, priority need to give for internal consumption first and thereafter any excess power can be exported to grid. Finalization of tariff is not under the purview of DNRE. Decisions of appropriate authority like Power Department, State Regulator - NERC may be followed.

12. **PROTECTIONS**

The system should be provided with all necessary protections like Earthing, Lightning, and Grid islanding as follows:

12.1. **LIGHTNING PROTECTION**

The SPV power plants shall be provided with lightning &overvoltage protection. The main aim in this protection shall be to reduce the over voltage to a tolerable value before it reaches the PV or other sub system components. The source of over voltage can be lightning, atmosphere disturbances etc The entire space occupying the SPV array shall be suitably protected against Lightning by deploying required number of Lightning Arrestors. Lightning protection should be provided as per IEC 62305standard. The

protection against induced high-voltages shall be provided by the use of metal oxide varistors (MOVs) and suitable earthing such that induced transients find an alternate route to earth.

12.2. SURGE PROTECTION

Internal surge protection shall consist of three MOV type surge-arrestors connected from +ve and –ve terminals to earth (via Y arrangement)

12.3. EARTHING PROTECTION

i. Each array structure of the PV yard should be grounded/ earthed properly as per IS:3043-1987. In addition the lighting arrester/masts should also be earthed inside the array field. Earth Resistance shall be tested in presence of the representative of DNRE official as and when required after earthing by calibrated earth tester. PCU, ACDB and DCDB should also be earthed properly.

ii. Earth resistance shall not be more than 5 ohms. It shall be ensured that all the earthing points are bonded together to make them at the same potential.

12.4. GRID ISLANDING:

i. In the event of a power failure on the electric grid, it is required that any independent power-producing inverters attached to the grid turn off in a short period of time. This prevents the DC-to-AC inverters from continuing to feed power into small sections of the grid, known as “islands.” Powered islands present a risk to workers who may expect the area to be unpowered, and they may also damage grid-tied equipment. The Rooftop PV system shall be equipped with islanding protection. In addition to disconnection from the grid (due to islanding protection) disconnection due to under and over voltage conditions shall also be provided.

ii. A manual disconnect 4-pole isolation switch beside automatic disconnection to grid would have to be provided at utility end to isolate the grid connection by the utility personnel to carry out any maintenance. This switch shall be locked by the utility personnel

13. CABLES

Cables of appropriate size to be used in the system shall have the following characteristics:

i. Shall meet IEC 60227/IS 694, IEC 60502/IS1554 standards
ii. Temp. Range: –10oC to +80oC.
iii. Voltage rating 660/1000V
iv. Excellent resistance to heat, cold, water, oil, abrasion, UV radiation
v. Flexible
vi. Sizes of cables between array interconnections, array to junction boxes, junction boxes to Inverter etc. shall be so selected to keep the voltage drop (power loss) of the entire solar system to the minimum. The cables (as per IS) should be insulated with a special grade PVC compound formulated for outdoor use.

vii. Cable Routing/ Marking: All cable/wires are to be routed in a GI cable tray and suitably tagged and marked with proper manner by good quality ferule or by other means so that the cable easily identified.

viii. The Cable should be so selected that it should be compatible up to the life of the solar PV panels i.e. 25 years.

ix. The ratings given are approximate. Bidder to indicate size and length as per system design requirement. All the cables required for the plant provided by the bidder. Any change in cabling sizes if desired by the bidder/approved after citing appropriate reasons. All cable schedules/layout drawings approved prior to installation.
x. Multi Strand, Annealed high conductivity copper conductor PVC type 'A' pressure extruded insulation or XLPE insulation. Overall PVC/XLPE insulation for UV protection Armoured cable for underground laying. All cable trays including covers to be provided. All cables conform to latest edition of IEC/ equivalent BIS Standards as specified below: BoS item / component Standard Description Standard Number Cables General Test and Measuring Methods, PVC/XLPE insulated cables for working Voltage up to and including 1100 V ,UV resistant for outdoor installation IS /IEC 69947.

xi. The size of each type of DC cable selected shall be based on minimum voltage drop however; the maximum drop shall be limited to 1%.

xii. The size of each type of AC cable selected shall be based on minimum voltage drop however; the maximum drop shall be limited to 2 %.

14. **CONNECTIVITY**

The maximum capacity for interconnection with the grid at a specific voltage level shall be as specified in the Distribution Code/Supply Code of the State and amended from time to time. Following criteria have been suggested for selection of voltage level in the distribution system for ready reference of the solar suppliers.

Plant Capacity	**Connecting voltage**
Up to 10 kW	240V-single phase or 415V-three phase at the option of the consumer
Above 10kW and up to 100 kW	415V – three phase
Above 100kW	At HT/EHT level (11kV/33kV/66kV) as per DISCOM rules

i. The maximum permissible capacity for rooftop shall be 1 MW for a single net metering point.
ii. Utilities may have voltage levels other than above, Power Department may be consulted before finalization of the voltage level and specification be made accordingly.
iii. For large PV system (Above 100 kW) for commercial installation having large load, the solar power can be generated at low voltage levels and stepped up to 11 kV level through the step up transformer. The transformers and associated switchgear would require to be provided by the SPV bidders for which additional cost will be borne by the beneficiary.

15. **TOOLS & TACKLES AND SPARES:**

i. After completion of installation & commissioning of the power plant, necessary tools for approval of specifications and make from Director, DNRE

ii. A list of requisite spares in case of PCU/inverter comprising of a set of control logic cards, IGBT driver cards etc. Junction Boxes. Fuses, MOVs / arrestors, MCCBs etc along with spare set of PV modules be indicated, which shall be supplied along with the equipment. A minimum set of spares shall be maintained in the plant itself for the entire period of warranty and Operation & Maintenance which upon its use shall be replenished

16. **DANGER BOARDS AND SIGNAGES:**

Danger boards should be provided as and where necessary as per IE Act. /IE rules as amended up to date. Three signage shall be provided one each at battery –cum- control room, solar array area and main entry from administrative block. Text of the signage may be finalized in consultation with Director, DNRE

17. **FIRE EXTINGUISHERS:**

The firefighting system for the proposed power plant for fire protection shall be consisting of:
a) Portable fire extinguishers in the control room for fire caused by electrical short circuits
b) Sand buckets in the control room
c) The installation of Fire Extinguishers should confirm to TAC regulations and BIS standards. The fire extinguishers shall be provided in the control room housing PCUs as well as on the Roof or site where the PV arrays have been installed.

18. **DRAWINGS & MANUALS:**

i. Two sets of Engineering, electrical drawings and Installation and O&M manuals are to be supplied. Bidders shall provide complete technical data sheets for each equipment giving details of the specifications along with make/makes in their bid along with basic design of the power plant and power evacuation, synchronization along with protection equipment.

ii. Approved ISI and reputed makes for equipment be used.

iii. For complete electro-mechanical works, bidders shall supply complete design, details and drawings for approval to Director, DNRE before progressing with the installation work

19. **PLANNING AND DESIGNING:**

i. The bidder should carry out Shadow Analysis at the site and accordingly design strings & arrays layout considering optimal usage of space, material and labor. The bidder should submit the array layout drawings along with Shadow Analysis Report to Director, DNRE for approval.

ii. Director, DNRE reserves the right to modify the landscaping design, Layout and specification of sub-systems and components at any stage as per local site conditions/requirements.

iii. The bidder shall submit preliminary drawing for approval & based on any modification or recommendation, if any. The bidder submit three sets and soft copy in CD of final drawing for formal approval to proceed with construction work.

20. DRAWINGS TO BE FURNISHED BY BIDDER AFTER AWARD OF CONTRACT

i. The Contractor shall furnish the following drawings Award/Intent and obtain approval

ii. General arrangement and dimensioned layout

iii. Schematic drawing showing the requirement of SV panel, Power conditioning Unit(s)/ inverter, Junction Boxes, AC and DC Distribution Boards, meters etc.

iv. Structural drawing along with foundation details for the structure.

v. Itemized bill of material for complete SV plant covering all the components and associated accessories.

vi. Layout of solar Power Array

vii. Shadow analysis of the roof

21. SOLAR PV SYSTEM ON THE ROOFTOP FOR MEETING THE ANNUAL ENERGY REQUIREMENT

The Solar PV system on the rooftop of the selected buildings will be installed for meeting upto 90% of the annual energy requirements depending upon the area of rooftop available and the remaining energy requirement of the office buildings will be met by drawing power from grid at commercial tariff of Power Department/ NERC notification.

22. SAFETY MEASURES:

The bidder shall take entire responsibility for electrical safety of the installation(s) including connectivity with the grid and follow all the safety rules & regulations applicable as per Electricity Act, 2003 and CEA guidelines etc.

23. DOCUMENTATION

The Installer shall supply the following documentation:

- ► System description with working principles.
- ► System single line diagram.
- ► Solar PV array lay-out.
- ► Routing diagram of cables and wires.
- ►Data sheets and user manuals of the solar PV panels and the solar grid
- ► inverter.
- ► A system operation and maintenance manual.
- ► Name, address, mobile number and email address of the service centre to be
- ► contacted in case of failure or complaint.
- ►Warranty cards.
- ► Maintenance registers.

24. QUALITY AND WORKMANSHIP

Solar PV modules are designed to last 25 years or more. It is therefore essential that all system components and parts, including the mounting structures, cables, junction boxes, distribution boxes and other parts also have a life cycle of at least 25 years. Therefore all works shall be undertaken with the highest levels of quality and workmanship. During inspection, DNRE representatives will pay special attention to neatness of work execution and conformity with quality and safety norms. Non-compliant works will have to be redone at the cost of the Installer.

25. APPROVAL / CLEARANCE DOCUMENT

Approval/ Clearance are to be obtained from ***Chief Electrical Inspectorate*** before interconnection to Grid for 10 kW RTS Power Plants and above.

Annexure - I

FORMATS FOR SUBMITTING EoI
Covering Letter
Ref.No._____Date:_____
From: _____ (Insert name and address of Individual) _____
_____ Tel. #: Fax#: E-mail address#

To,

Director,
Directorate of New and Renewable Energy (DNRE),
Old Industries Office Building, Upper Chandmari
Kohima - 797001. Nagaland

Sub: EoI for the empanelment of the experienced firms for "Supply, erection, testing and commissioning including warranty, operation & maintenance for 5 years of grid interactive rooftop solar PV power plant of various capacities in the State of Nagaland

Dear Sir,

We, the undersigned….(insert name of the 'Bidder') having read, examined and understood in detail the EoI Document for Implementation of Grid connected Roof Top Solar PV System Scheme in Nagaland State in India hereby submit our Bid comprising of Price Bid and Technical Bid.

1. We give our unconditional acceptance to the EoI no. ……., dated……and EoI Documents attached thereto, issued by Director, Directorate of New and Renewable Energy (DNRE), Nagaland, as amended. As a token of our acceptance to the EoI Documents, the same have been initiated by us and enclosed to the Bid. We shall ensure that we execute such EoI Documents as per the provisions of the EOI and provisions of such EOI Documents shall be binding on us.

2. EMD/Security money

We have enclosed a EMD/Security money of Rs…….(Insert Amount), in the form of bank guarantee no……..(Insert number of the bank guarantee) dated……(Insert date of bank guarantee) as per Format ……from ……(Insert name of bank providing EMD/Security money) and valid up to ……in terms of Clause ……of this EoI

3. Acceptance

I. We hereby unconditionally and irrevocably agree and accept that the decision made by Directorate of New and Renewable Energy (DNRE), Nagaland in respect of any matter regarding or arising out of the EoI shall be binding on us. We hereby expressly waive any and all claims in respect of Bid process.

II. We confirm that there are no litigations or disputes against us, which materially affect our ability to fulfil our obligations with regard to execution of projects.

4. Familiarity with Relevant Indian Laws & Regulations

We confirm that we have studied the provisions of the relevant Indian laws and regulations as required to enable us to submit this Bid and execute the EoI Documents,

in the event of our selection as Successful Bidder. We further undertake and agree that all such factors as mentioned in EOI have been fully examined and considered while submitting the Bid.

5. Contact Person
Details of the contact person are furnished as under:
Name : ……
Address : ……
Phone Nos. : ……
Fax Nos. : ……
E-mail address : ……

6. We are enclosing herewith the Technical Bid (Envelope I) and Price Bid (Envelope II) containing duly signed formats, each one duly sealed separately, in one (1) original as desired by you in the EoI for your consideration.

7. It is confirmed that our Bid is consistent with all the requirements of submission as stated in the EoI and subsequent communications from Directorate of New &r Renewable Energy Nagaland, Kohima.

8. The information submitted in our Bid is complete, strictly as per the requirements stipulated in the EOI and is correct to the best of our knowledge and understanding. We would be solely responsible for any errors or omissions in our Bid.

9. We confirm that all the terms and conditions of our Bid are valid for acceptance for a period of ……from the Bid Deadline.

10. We confirm that we have not taken any deviation so as to be deemed non-responsive.

Dated the_____day of_____,20….

Thanking you,

Yours faithfully,

Name
Designation
Address
Seal

Annexure - II

GENERAL PARTICULARS OF THE BIDDER

1. Name of Bidder / Firm :

2. Address for correspondence :

3. Telephone No., E-mail address and Fax No.

4. Copy of PAN and GST TIN registration

5. Name and Designation of the Authorized Representative of the bidder to whom all the references shall be made :

6. Amount and reference of cost of tender Bid document (Drawn on Bank & D.D. No.& date)

7. Amount and reference of E.M.D. Deposited drawn on Bank & D.D. No.& date)

8. Financial capability of the contractor/ Firm for carrying out the work

9. Has the firm ever been debarred by any Govt. Deptt/Agency/ organization for undertaking any work:

10. Details of offer (Mention No of pages) :

11. Reference of any other information attached by the Bidder:

12. Authorized representative for any correspondence

13. Whether service center for after sales service set up in the state, give details & address

(Signature of Bidder)
with Designation & Seal

Annexure - III

EXPERIENCE OF THE BIDDER

Please fill in the information about the similar projects undertaken over the last three years
Name of organization by whom work was awarded. Please give Project wise detail of projects installed/ commissioned : -

1. Name and location of the works.

2. Total amount of Contract.

3. Year of Award.

4. Detail of involvement in work as an individual or as a company.

5. Was the work completed satisfactorily and within the stipulated time period.

6. Particulars of evidence enclosed in token of above.

7. Whether list of past supplies enclosed as per Annexure - V

8. Whether past performance obtained from DNRE / utilities enclosed

(Signature of Bidder)
with Designation & Seal

Annexure - IV

DECLARATION BY THE BIDDER

I/We_____ (herein after referred to as the bidder) being desirous of bidding for the supply, erection, testing , installation and commissioning of SPV power plants up to 1000 kWp in different parts of Nagaland including warranty period of 5 years as shown in scope of bid specification . We have fully understood the nature of the work and carefully noted all the terms and conditions, specifications etc. as mentioned in the bid documents, hereby declare that:-

1. The bidder is fully aware of all the requirements of the bid documents and agrees with all the provisions of the bid documents.
2. The bidder is capable of executing and completing the work as required in the bid.
3. The bidder accepts all risks and responsibilities directly or indirectly connected with the performance of the bid.
4. The bidder is financially solvent and sound to execute the bid.
5. The bidder is sufficiently experienced and competent to perform the contract to the satisfaction of DNRE
6. The information and statements submitted with the bid are true.
7. The bidder has not been debarred from similar type of work by any Govt Dept./Agency/Organization.
8. This offer will remain valid for acceptance for 12 (twelve) months from the date of opening of the bid/empanelment.
9. The bidder gives the assurance to execute the bidded work as per the specifications, terms and conditions and in exact configuration of the sample submitted on award of the work.

(Signature of Bidder)
with Designation & Seal

Annexure - V

SCHEDULE OF PAST WORKS ACCOMPLISHED IN LAST THREE YEARS

SCHEDULE OF PAST WORKS ACCOMPLISHED IN LAST THREE YEARS Sl. No	**Description**	**Work order No. and date**	**Name of Agency**	**Date of work completion as per order**	**Actual date of work completion/ commissioning**

(Signature of Bidder)
with designation & seal

Note:- Performance certificate from the concerned utilities along with their communication address, email and FAX No. is required for authentication of certificates.

Annexure VI

PROFORMA FOR BANK GUARANTEE FOR EMD/Security money
(On Non-Judicial stamp paper of appropriate value)
Ref.: Date:
Bank Guarantee No.:

To,

Director,
New and Renewable Energy (DNRE),
Old Industries Office Building, Upper Chandmari
Kohima - 797001. Nagaland

Dear Sir,

In accordance with Invitation of Bids under Bid document No……. M/S…… having its Registered/ Head Office at ……(hereinafter called the "Bidder") who wishes to participate in the said tender for implementation of Grid connected Roof Top Solar PV System Scheme in Nagalandr State as per tender specification.
We, the ……. (Name & Address of the bank) …… and having our Head Office at ……(#)…… Guarantee and undertake to pay immediately on demand by …… (Directorate of New & Renewable Energy, Nagaland) hereinafter called the 'DNRE' …… the amount of ……(*)…… without any reservation, protest, demand and recourse to the extent of the said sum of Rs…… (Rupees……only). Any such demand made by the 'DNRE' shall be conclusive and binding on us irrespective of any dispute or difference raised by the Bidder. This guarantee shall be irrevocable and shall remain valid up to …… (as per clause 2.1 of the EoI) . If any further extension of this guarantee is required, the same shall be extended to such required period on receiving instructions from M/s…… (Bidder's name) …… on whose behalf this guarantee is issued.
In witness whereof the Bank, through its authorized officer, has set its hand and stamp on this …… day of …… 20 …… at ……
Witness: ……
(Signature)
……
(Signature)
(Name)……
……
(Name) (Designation with Bank)
Seal)……
(Official Address)

Stamp……
Attorney as per Power of No……
Date……
Note:

1. (*) the amount shall be as specified in the Bid document. (#) Complete mailing address of the Head Office of the Bank to be given.
2. The Bank Guarantee shall be from a Bank as defined in Clause 2.1 of the Bid document.
3. The Stamp Paper of appropriate value shall be purchased in the name of guarantee issuing Bidder/bank issuing the guarantee.

Annexure VII

Financial Bid

(The Format should be on the Letter Head of the firm)

Date : _____

From : _____(Insert name and address of firm)

_____

_____

Tel.#: Fax#: E-mail address#

To,

Director,
New and Renewable Energy (DNRE),
Old Industries Office Building, Upper Chandmari
Kohima - 797001. Nagaland

Name of Work: Empanelment of the experienced firms for "Supply, erection, testing and commissioning including warranty, operation & maintenance for 5 years of grid interactive
rooftop solar PV power plant of capacity upto 500 kWp in the State of Nagaland.

We give our unconditional financial rates in response of this EoI Document issued by DNRE:

Sl No	**Capacity and configuration of RTS power plant**	**System cost inclusive of taxes Per kWp**	**Cost of Installation & commissioning inclusive of taxes Per kWp**	**Rates for 5 years comprehensive maintenance Per kWp**	**Total cost Per kWp**
1	Up to 5 KWp				
2	6 to 10 KWp				
3	11 to 50 KWp				
4	51 to 100 KWp				
5	101 to 300 KWp				
6	301 to 500 KWp				

Note: The above rates are quoted in INR per KW and are inclusive of all the taxes and duties including transportation at site. *Also note that the Financial Bid should be submitted preferably District-wise to arrive at a realistic cost.*

Signature
Name
Designation with Seal

FORMAT FOR APPLICATION FOR SOLAR POWER CONNECTIVITY

To: Date: [dd mm yyyy]

The Executive Engineer/ Sub-Division Officer
Electrical Division [Name of Office]
Name of District, Nagaland

Sir,

I / we herewith apply for a solar energy net-metering connection at the service connection and for the Solar PV Plant of which details are given below:

Sl No.	Description	Details as required
1	Name of applicant	
2	Address of applicant	
3	Service connection number /consumer ID	
4	a) Sanctioned load b) Contracted Load /demand	
5	Service connection tariff	
6	Telephone number / Mobile No.	
7	Email ID	
8	Solar PV Plant capacity in kWp	
9	Solar grid inverter make and type	
10	Solar grid inverter has automatic isolation protection (anti islanding) (Y/N)	
11	Has a Solar Generation Meter been installed (Y / N)	
12	Expected date of commissioning of Solar PV System	
13	Details of test certificates of Solar PV plant /inverter for standards required.	

Name:
Signature:

RECEIPT OF APPLICATION FOR ROOFTOP SOLAR

Received an application for a solar energy net-metering connection from:

Name:

Date:

Service Connection number / Consumer ID:

Application Registration No:

Solar Plant Capacity :

Name of Officer :
Signature:
Designation / (Power Department)

Sample Net Metering Inter Connection Agreement

This Agreement is made and entered into at (location) _____ on this (date) _____ day of (month) _____ year _____ between
The Eligible Consumer, by the name of _____ having premises at (address) _____ as first party

AND

Distribution Licensee (hereinafter called as Licensee) and represented by _____ (designation of office) and having its registered office at (address)_____ as second party of the agreement.

And whereas, the Licensee agrees to provide grid connectivity to the Eligible Consumer for injection of the electricity generated from his/ her SPV plant of capacity _____ kilowatts peak into the power system of Licensee and as per conditions of the agreement and Nagaland Electricity Regulatory Commission (Rooftop Solar Grid interactive system based on Net Metering) Regulations, 2016, issued by the Nagaland Electricity Regulatory Commission (NERC) dated 6th Dec, 2016..

Both the parties hereby agree to as follows :

1. Eligibility

1.1 Eligibility for net-metering has been specified in the relevant clauses of the Nagaland Electricity Regulatory Commission (Rooftop Solar Grid interactive system based on Net Metering) Regulations, 2016. Eligible Consumer has to meet the standards and conditions for being integrated into grid/distribution system.

2. Technical and Interconnection Requirements
2.1 The Eligible Consumer agrees that his solar generation plant and net metering system will conform to the standards and requirements specified in Nagaland Electricity Regulatory Commission (Rooftop Solar Grid interactive system based on Net Metering) Regulations, 2016 and in the following codes as amended from time to time

- CEA's (Technical Standards for connectivity of the Distributed Generating Resources) Regulations, 2013
- Central Electricity Authority (Installation and Operation of Meters) Regulation 2006
- Nagaland Electricity Regulatory Commission (NERC) (Standards of Performance in Distribution and Transmission) Regulations, 2011

2.2 Eligible Consumer agrees that he has installed or will install, prior to connection of photovoltaic system to Licensee's distribution system, an isolation device (both automatic and inbuilt within inverter and external manual relays) and agrees for the Licensee to have access to and operation of this, if required and for repair & maintenance of the distribution system.
2.3 Eligible Consumer agrees that in case of a power outage on Licensee's system, photovoltaic system will disconnect/isolate automatically and his plant will not inject power into Licensee's distribution system.
2.4 All the equipment connected to distribution system shall be compliant with relevant international (IEEE/IEC) or Indian standards (BIS) and installations of electrical

equipment must comply with Central Electricity Authority (Measures of Safety and Electricity Supply) Regulation, 2010.
2.5 Eligible Consumer agrees that licensee will specify the interface/interconnection point and metering point.
2.6 Eligible Consumer and licensee agree to comply with the relevant CEA & NERC Regulations in respect of operation and maintenance of the point, drawing and diagrams, site responsibility schedule, harmonics, synchronization, voltage, frequency, flicker etc.
2.7 Due to Licensee's obligation to maintain a safe and reliable distribution system, Eligible Consumer agrees that if it is determined by the Licensee that Eligible Consumer's photovoltaic system either causes damage to and/or produces adverse effects affecting other consumers or Licensee's assets, Eligible Consumer will have to disconnect photovoltaic system immediately from the distribution system upon direction from the Licensee and correct the problem at his own expense prior to a reconnection.
2.8 The consumer shall be solely responsible for any accident to human being / animals whatsoever (fatal/non-fatal) that may occur due to back feeding from the solar plant when the grid supply is off. The licensee reserves the right to disconnect the consumer's installation at any time in the event of such exigencies to prevent accident or damage to life and property.

3. Clearances and Approvals

3.1 The Eligible Consumer shall obtain all the necessary approvals and clearances (environmental and grid connection related) before connecting the photovoltaic system to the distribution system.

4. Access and Disconnection

4.1 Licensee shall have access to metering equipment and disconnecting means of the solar photovoltaic system, both automatic and manual, at all times
4.2 In emergency or outage situation, where there is no access to the disconnecting means, both automatic and manual, such as a switch or breaker, Licensee may disconnect service to the premises of the Eligible Consumer.

5. Liabilities

5.1 Eligible Consumer and Licensee shall indemnify each other for damages or adverse effects from either party's negligence or intentional misconduct in the connection and operation of photovoltaic system or Licensee's distribution system.
5.2 Licensee or Eligible Consumer shall not be liable to each other for any loss of profits or revenues, business interruption losses, loss of contract or loss of goodwill, or for indirect, consequential, incidental or special damages, including, but not limited to, punitive or exemplary damages, whether any of the said liability, loss or damages arise in contract, or otherwise:
Provided that in case of any dispute in respect of clause 5.1 and 5.2 above, the decision of the Commission shall be final and binding on both the parties.
5.3 Licensee shall not be liable for delivery or realization by Eligible Consumer for any fiscal or other incentive provided by the Central / State Government beyond the scope specified by the Commission in its relevant Order.
5.4 The Licensee may consider the quantum of electricity generation from the rooftop solar PV System under net metering arrangement towards RPO. (Applicable only in case of Eligible Consumer who is not defined as an Obligated Entity).
5.5 The proceeds from CDM benefits shall be retained by the Licensee.

6. Commercial Settlement

6.1 All the commercial settlement under this agreement shall follow the Net Metering Regulations, 2015 issued by NERC

7. Connection Costs

7.1 The Eligible Consumer shall bear all costs related to setting up of photovoltaic system including metering and interconnection costs. The Eligible Consumer agrees to pay the

actual cost of modifications and upgrades to the service line required to connect photovoltaic system to the grid in case it is required.

8. Termination

8.1 The Eligible Consumer can terminate agreement at any time by providing Licensee with 30 days prior notice.

8.2 Licensee has the right to terminate Agreement on 30 days prior written notice, if Eligible Consumer commits breach of any of the term of this Agreement and does not remedy the breach within 30 days of receiving written notice from Licensee of the breach.

8.3 Eligible Consumer shall upon termination of this Agreement, disconnect the photovoltaic system from Licensee's distribution system in a timely manner and to Licensee's satisfaction.

In witness, whereof, Mr._____ for and on behalf of _____ (Eligible Consumer) and Mr._____ for and on behalf of _____(Licensee) sign this agreement in two originals.

Eligible Consumer	Distribution Licensee
Name	Name
Address	Designation
Service Connection No. / Consumer ID	Office Address.